

Aquilegia

Newsletter of the Colorado Native Plant Society



"... dedicated to the appreciation and conservation of the Colorado native flora"

2007 Field Trips

The Colorado Native Plant Society is pleased to present the field trips for 2007! We hope everyone in the society takes an opportunity to join us this spring and summer! We are looking forward to a diverse set of trips to virtually all major life zones in the state. This year we are including two trips to count butterflies and study their nectaring plants, plus several trips co-sponsored by our good friends at the Colorado Natural Areas Program. Take an opportunity to get out see what's blooming!

Tentatively, we plan to limit these trips to 20 individuals or fewer, per trip. If requests exceed the ceiling of 20, we will decide if the trips can be expanded to accommodate the interest level. Some trip leaders have requested fewer than 20, so read the trip description and be sure to register with the leader or other contacts that are listed. Also, please note that CONPS has set policies for society-sponsored field trips. The policies include the following: 1) refrain from plant collecting except for scientific study, 2) we encourage ride and cost sharing for the trips, 3) no pets on trips, 4) trips are typically aimed at adult audiences unless otherwise specified, and 5) participants must sign a waiver and release of liability form. The written policies and waiver form can be accessed at http://www.conps.org/field_trips.html. Questions on the field trip program can be forwarded to Steve Yarbrough at westernecological@msn.com.

Always be prepared for changes in weather. Dress in layers and bring appropriate rain gear. Don't forget snacks and plenty of water. Sunscreen and a good hat are certainly tools of the trade!

--Steve Yarbrough, Field Trips Committee Chair

Duck Creek, Rio Blanco County

May 12

Leaders: Colorado Natural Areas Program (CNAP) staff

Duck Creek, an Area of Critical Environmental Concern and a registered Colorado Natural Area, has the best population of the federally-threatened *Lesquerella congesta*. Members will revisit existing monitoring transects to gather data that will complement information collected by CONPS in 2006. This trip is limited to 10 participants. To register, contact Steve Yarbrough at westernecological@msn.com.

Denver Botanic Gardens

June 11, 6:30 - 8:30 pm

Leader: Panayoti Kelaidis

For much of their first half century, most of the plantings at Denver Botanic Gardens focused on relatively conventional gardens you would expect to find at any botanic garden: herb gardens,

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annual test gardens, iris, daylily and dahlia beds. Many members and visitors are probably not aware that starting 30 years ago a remarkable series of gardens have been created featuring native Colorado and Western plants. Four of these are unirrigated in order to accommodate the dry taste of native lowlanders (Dryland Mesa, Plains Garden, Sacred Earth, Anna's Overlook) and many more are minimally watered (Western Panoramas, Wildflower Treasures, Gates). Altogether, they encompass the finest cultivated collections of wildflowers of the Great Plains, Rocky Mountains and Intermountain region. The first week of June is usually the very peak of color and interest in these extraordinary gardens. It will be a pleasure for Denver Botanic Gardens staff to guide members of CONPS through them.

NE Colorado Sandhills & Sandstone Bluffs Flora

June 19

Leader: Bruce Bosley

This field trip will be conducted in the wide open spaces of eastern Yuma County, so there will be an overnight option. This summer will likely be a fantastic wildflower show based on the snows (and accompanying moisture). Carpooling will be arranged from Ft. Collins. For more information contact Bruce Bosley (970-842-2120 or Bruce.Bosley@colostate.edu) or Denise Culver (970-491-2998)

Native Orchid Hike to Peaceful Valley

June 24, 2007

Leader: Denise Wilson and Scott Smith

This hike, along the Middle St. Vrain into Peaceful Valley, will hit the trail to see some 11 species of our native orchids in their wild habitat, including the Fairy Slipper and Clustered Lady's-slipper. The drive up the Peak to Peak Highway is about one hour and 45 minutes through beautiful scenery; we will meet at Vic's Coffee on the east side of the Albertson's parking lot at 30th and Iris in Boulder at 8:00am. Expect variable weather, terrain, some altitude gain, and a little bog walking, and bring a lunch. We should return by 4pm. Because of the length of the trip, the moderate difficulty, and sensitivity to trampling, unfortunately, we must limit the number of participants to 12. We will have an additional two leaders to help spot the plants. This is a slow hike due to the photo opportunities. Contact Denise to register at denisewil@aol.com.

Boulder County Native Seed Collection

June 27, evening

Boulder area location and time TBA; please check the conps.org website for updates. This is the first of four collection days and it is in collaboration with Wildlands Restoration Volunteers (WRV) and Boulder County Parks and Open Space. The CONPS Boulder Chapter will provide yummy snacks and drinks to kick-off this collaboration! Many land restoration projects depend on precious hand collected native seed because purchased seeds are unavailable, too expensive, or not an acceptable match to the local native species ecotypes. During these seed collection sessions, we will hand collect a variety of species, including mostly grasses, sedges, and some wildflowers and other forbs. These seeds will be multiplied agriculturally by an inter-government agency partnership. This process increases (100 or 1000 fold) the amount of locally adapted grass seed that is available for revegetation projects on local public lands. Seed collection is more than a series of volunteer projects; it's a program to develop a pipeline for gathering, multiplying, and distributing native seed for important restoration projects. The county will choose the location based on seed ripeness/needs at a later date. No experience necessary. Minimum age: 8 with an adult. Additional dates: July 18, Aug 15, Sept 19. Please RSVP with Deby Stabler (303-902-4679; debystabler@yahoo.com) or WRV at info@wlr.org and be sure to mention you are with the CONPS.

Hanging Lake Trail

Leaders: Denise Wilson and Leo P. Bruederle

July 1, 10 am-4 pm

Although you've probably driven past the Hanging Lake trailhead numerous times, you may have overlooked this strenuous, yet stunning hike. The Hanging Lake trail follows Dead Horse Creek through riparian plant communities that include elements from eastern North America, as well as numerous ferns and mosses. At trail's end, hikers are greeted by Hanging Lake, which is encircled by weeping (and spouting) limestone cliffs replete with hanging gardens. Although we will meet at the trailhead for this daylong field trip, car pooling will be available... and some folks may want to head to the Glenwood Hot Springs afterward. Contact Leo at leo.bruederle@cudenver.edu or 303-556-3419.

Cal Wood Butterfly Count

July 3-4

Leader: Janet Chu

Meet at 8:00 am (if not staying overnight at Cal-Wood) at Safe-way's northern parking lot facing Iris and 28th St. in Boulder, to carpool. Or drive up to the Geier's Meadow, next to Cal-Wood by 9:00 am (if participants come from Lyons or Nederland). Identification in the field with experts. There will be lots of teaching and learning from 8:00 a.m. until 2:30 pm. From 2:30 pm on we will compile the day's butterfly count.

Robert Michael Pyle will join the groups on July 3 and 4. His recently published book is receiving great acclaim. *Sky Time in Gray's River - Living for Keeps in a Forgotten Place* captures the essence of a northern place, its people, traditions and natural history.

CONPS members will be most welcome to join us on either this or the following Gilpin County butterfly count events. We will pay special attention to finding the host plants for caterpillars, as well as nectaring plants. Anyone who registers ahead of time will be sent a list of plants and butterflies that I have compiled for Boulder County and environs. Please contact Jan at 303-494-1108 or e-mail chuhouse@hotmail.com. Let us know you're coming. Registration forms will then be e-mailed or snail-mailed.

Two Buttes & Shell Rock Natural Area

Date: July 7, 2007 (with potential option on July 8)

Leaders: Colorado Natural Areas Program (CNAP) staff

Two Buttes, Prowers County, is a distinct landform on the eastern slope that also has a population of the rare *Frasera coloradensis* (Colorado Gentian). This area will be surveyed to determine the extent of the rare plant. For those able to camp for the night near Two Buttes, an additional survey for *F. coloradensis* will be completed the next day at the designated Shell Rock Natural Area in nearby Baca County. To register, contact Steve Yarbrough at westernecological@msn.com.

Gilpin County Butterfly Count

July 8, 8:15 am - 2:30 pm

Leader: Janet Chu

A butterfly count will be conducted. The results will be compiled into a master list later in the day at Ray and Kit Stanford's cabin above Central City. Maps to the cabin, and also permits to enter the Jefferson County Open Space areas, will be provided when you

arrive at 8:15 am. We will meet at 8:15 am at the east side of Tunnel 1, along Hwy 6, west of Golden. We will carpool from there.

Each of the count results is reported to the North America Butterfly Association. \$3.00 is collected for each count. The 2006 results for counts in North America, including Mexico may be purchased at this time for \$6.00.

Please Contact Jan at 303-494-1108 or e-mail chuhouse@hotmail.com for more information and to register.

Fens of South Park

July 15

Leaders: Steve Yarbrough

Join us for a full day of exploring the fen wetlands of South Park, Park County. The trip will begin with a fun stop at Teter Fen, near Michigan Hill. Additional stops may include Fremont Fen and Tarayall Mire Complex. We will end the day at the High Creek Fen. The day will feature many rare plants including *Primula egaliksensis*, *Carex scirpoidea*, *Carex livida*, *Trichophorum pumilium*, *Packera pauciflora*, *Ptilagrostis porteri*, *Sisyrinchium pallidum*, and *Salix candida*. We also discuss their hydrogeology and soil. To register, contact Steve Yarbrough at westernecological@msn.com.

Lake Pueblo State Park

August 5-6

Leaders: Michelle DePrenger-Levin

& Jenny Ramp Neale (DBG)

We will be monitoring the rare shrub, *Frankenia jamesii*, known only from the Arkansas river valley. A biological control beetle has been released to fight *Tamarix* ssp., which occur in close proximity to the native shrub. The two families are closely related and thus any non-target effects of the beetle are most likely to occur on *Frankenia*. Join Denver Botanic Gardens staff to monitor the populations of *Frankenia jamesii*, examine possible effects of the beetle, and learn about the rare plant communities containing *Frankenia jamesii*. We will camp Sunday night in the park and monitor the populations Monday morning.

This trip is limited to 10 participants, camping costs will be covered and some meals may be included. Sunday night there will be a presentation on the flora of the area and our study. For more information or if you are interested in carpooling, contact Michelle at 720-865-3630 or deprengm@botanicgardens.org.

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2007 Field Trips (continued from page 3)

Glade Reservoir Plant Survey

May 19 and August 18

Leaders: Denise Culver & Mark Easter

We will survey for rare plants and create a species list within the proposed areas for the Glade Reservoir project. We will be looking for Bell's twinpod (*Physaria bellii*), Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradoensis*) and Ute ladies' tresses (*Spiranthes diluvialis*) north of Ted's Place and the Environmental Learning Center. For more information on the Glade Reservoir project see www.savethepoudre.org. Contact Denise Culver (970) 491-2998 or Denise.Culver@colostate.edu for more information.



Winter Botany at Brainard Lake Recreation Area

January 12, 2008, 11:00 am

Leader: Leo P. Bruederle

Leo Bruederle will once again attempt to lead a trip emphasizing identification of plants in their winter condition (NOTE: a similar trip was cancelled in 2007 due to low temperatures). Brainard Lake Recreation Area is in the Roosevelt National Forest west of Ward, CO (Boulder County). As such, we will be snowshoeing through subalpine meadows, forests, and woodlands, while identifying the prominent shrubs and trees dominating the gently sloping landscape. However, we will also take advantage of our understanding of basic botany to identify weeds and other herbaceous plants using characteristics of their growth form, inflorescence, and fruit. Why put our hand lenses and field keys away in September with winter botany still ahead. To register for this field trip co-sponsored by the UCDHSC Department of Biology, please contact Leo at leo.bruederle@cudenver.edu or 303-556-3419.



SAVE THE DATE! CONPS 2007 ANNUAL MEETING



When: Weekend of September 7th to 9th

Where: University of Colorado, Boulder Campus

What: Botany Goes Buggy in Boulder: Plants and Insects!

The Boulder Chapter is pleased to host the 2007 Annual Meeting to explore the interactions between plants and insects. The schedule will follow the traditional format with warm-up events on Friday evening, speakers on Saturday, and field trips on Sunday. Come get BUGGY with BOTANY in BOULDER! Details to follow in a special mailing this summer.

WHO'S IN THAT NAME?

George Engelmann

by Al Schneider

Picea engelmannii, *Erigeron engelmannii*,
Eucephalus engelmannii, *Oönothis engel-*
mannii, *Carex engelmannii*, *Oenothera*
engelmannii



G. Engelmann

Photo from: Missouri Botanical Garden Archives, The Collected Works of George Engelmann (1887)

George Engelmann was born in Germany in 1809 and died in St. Louis in 1884. He received his medical degree in 1831 and published his first botanical work in 1833. In Europe he was in the company of Agassiz and other eminent scientists but in 1832 his adventurous spirit brought him first to New York, then to the intellectual capital of Philadelphia, and on to St. Louis in 1833. St. Louis was his home for the next fifty years; he was revered there as an eminent physician, a superb botanist, and a gentleman.

St. Louis was, of course, a starting point for many Western explorations and throughout his years there, Engelmann was sought out by many botanists and explorers for his expertise, his support (botanical, financial, and moral), and his connections with Eastern botanists Asa Gray and John Torrey. He received and described plant

collections from many Western botanists and explorers: Augustus Fendler, John Fremont, Charles Geyer, Josiah Gregg, Charles Parry, Friedrich Wislizenus. He, himself, made a number of collecting trips to Colorado and many other areas of the West and he is honored in the name of many plants, especially in his favorite area of expertise, the Cactaceae. He described, according to Dr. Oscar Soule, 108 Cacti, "over two-thirds of the forms recognized today".

In St. Louis Engelmann was chosen by Henry Shaw, wealthy St. Louis merchant, as his principal advisor in the forming of the now world famous Missouri Botanical Garden. Shaw consulted with Engelmann, Asa Gray, and William Hooker as he created the Garden, which opened in 1857. Engelmann bought a 62,000 species plant collection to begin the Garden's Herbarium, and in 1890, after his death, his own collection of 100,000 specimens, including his collection from Colorado, was donated to the Garden. (The Missouri Botanical Garden's herbarium now has 5.5 million specimens [second largest in the U.S. and sixth in the world]). The herbarium includes 80,000 type specimens. Five thousand of Engelmann's letters and 30 boxes of his botanical notes are in the Garden's archives.

Engelmann was held in high esteem not only in St. Louis and in botanical circles but also

throughout the United States. He was elected by Congress as one of 50 founding members of the National Academy of Sciences.

Charles Parry honored George Engelmann in the name of a most common and beautiful tree, the Engelmann Spruce, *Picea engelmannii*, which actually was known as *Abies engelmannii* for several decades after its 1862 discovery by Parry.

A new biography of Engelmann is being written by Michael Long of St. Louis; it should be out in 2009.

Al Schneider is CONPS webmaster and has generously taken the time to write our 'Who's in that Name?' Column. He can be reached at webmaster@conps.org.



CONSERVATION CORNER

Native Prairie Restoration At Rocky Mountain Arsenal National Wildlife Refuge

by Terry Wright

Establishing native prairie at an EPA Superfund site is a unique task currently being undertaken by the U.S. Fish and Wildlife Service at the 16,000 acre Rocky Mountain Arsenal National Wildlife Refuge (RMANWR) located in Commerce City, Colorado. Even though the Arsenal has a history of being one of the most contaminated landscapes in the United States, about 4,500 acres of native prairie have already been restored, and an additional 6,200 acres are identified for restoration prior to the year 2012.

The story of the Arsenal as a chemical weapons production facility and as a pesticide producing facility and the associated contamination clean-up is well known. What may not be well known was that by 1942, most of the original native shortgrass prairie within the Arsenal had already been permanently destroyed as a result of the farming activities from homesteaders. When the Army took over the site in 1942, most farmground was abandoned and reverted to weeds. The Army did seed thousands of these acres to crested wheatgrass during the 1950's to alleviate some of the problems created by these "go back" fields, primarily to prevent blowing tumbleweeds from collecting around buildings, parking lots, and on equipment.

To restore areas with the extensive weed seed bank present at RMANWR, the U.S. Fish and Wildlife Service uses a variety of special techniques and equipment. The seed mixes are specific to soil textures and contain adapted native species that can survive in a 13" mean annual precipitation zone.

A weed-free, properly compacted seedbed is the most important starting point to restoration success. The seedbed preparation



Blazing star

starts two years in advance of seeding, and typically involves the use of herbicides such as Roundup to kill any undesirable existing vegetation. This is followed by some sort of mechanical tillage, usually plowing and/or disking, which improves soil tilth. Chemicals like Roundup herbicide are used to keep the ground weed-free over the remaining portion of the summer.

If the future seedbed is a borrow area where topsoil has been removed, soil amendment (composted cow manure) is added to replace the organic matter that was lost with the original topsoil. At the start of the second growing season, cover crops like grain sorghum (milo) or oats are planted. Cover crops compete with germinating weeds, add nutrients to the soil, help collect snow-fall in the winter for additional moisture, improve soil tilth, and provide additional cover and food for wildlife. It is important to manage the cover crops so they do not get too tall or produce viable seedheads. This can be done by mowing or chemical treatment. The crop stubble is then left standing through the winter.

When the third growing season arrives, a final application of Roundup herbicide is made over the crop stubble to kill any germinating weedy plants. The stubble is left alone and there are no more mechanical tillage treatments. This helps preserve soil moisture and keeps the seedbed firm. The final native seed mix is then drilled directly into the crop stubble. Our native prairie seed mixes typically consist of about 80-90% native grasses, 5% shrubs, and 10-15% forbs.

On the sandier soils, the major species include blue grama (*Bouteloua gracilis*), sideoats grama (*Bouteloua curtipendula*), sand bluestem (*Andropogon hallii*), switchgrass (*Panicum virgatum*), prairie sandreed (*Calamovilva longifolia*), little bluestem (*Schizachyrium scoparium*), and Indian ricegrass (*Oryzopsis*



Drill Seeder

CONSERVATION CORNER

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hymenoides). On more clayey textured soils, buffalograss, blue grama, western wheatgrass (*Pascopyron smithii*), and green needlegrass (*Nasella viridula*) are major species.

Forb species include such plants as blue flax (*Linum lewisii*), blanketflower (*Gaillardia aristata*), yarrow (*Achillea lanulosa*), plains coreopsis (*Coreopsis tinctoria*), dotted gayfeather (*Liatris punctata*), scarlet globemallow (*Sphaeralcea coccinea*), narrow-leaf penstemon (*Penstemon angustifolius*), Rocky mountain bee plant (*Cleome serrulata*), purple prairie clover (*Dalea purpurea*), black-eyed susan (*Rudbeckia hirta*), and prairie coneflower (*Ratibida columnifera*). When possible, certain species of grass and forb seed are harvested directly on-site and are used in the seed mixes. Sometimes forbs and shrubs are seeded separately in the fall so that cold stratification of the seed occurs naturally and better germination results.

Six inches of supplemental water is then applied for the first growing season through various types of irrigation systems during the months of June, July and August. In June, more frequent surface watering takes place to aid germination. During July, the watering interval gets longer, forcing plant roots to go deeper. In August, the watering interval continues to increase, which helps roots to go deep and helps the plants adapt to drought conditions.

Keeping newly seeded grass stands mowed to height of about 12" is required during the first growing season to prevent shading from broadleaved weeds, typically *Kochia*. Some areas need to be spot sprayed with chemical. Usually, by the third growing season the broadleaved weeds begin to disappear from the stand, and the natives begin dominating.

All grass stands need some sort of disturbance over time to keep them healthy and robust. Until recently, prescribed fire has been the only management tool at RMANWR available to reduce thatch levels, invigorate native plants, create vegetative mosaics, and kill unwanted weedy forbs and grasses. However, on March 17, 2007, sixteen bison arrived at RMANWR from the National Bison Range in Montana. As the bison herd increases in size, their natural grazing on restored grasslands in combination with the strategic use of prescribed fire will keep restored grasslands healthy and functioning as they once did.

Terri Wright is a Rangeland Management Specialist at the U.S. Fish and Wildlife Service. Contact Terri at Terry_Wright@fws.gov.

Volunteers Needed

– Conservation Activities in the Front

Would you like to give something back to the wild places you love? Please join us to help restore special places in Colorado.

Wildlands Restoration Volunteers is a Boulder-based non-profit organization that provides an opportunity for people to learn about their natural environment and take direct action to restore and care for the land. WRV organizes over 20 volunteer stewardship projects per year in the greater Front Range area.

We collaborate closely with local open space departments, Colorado State Parks, the U.S. Forest Service and several other agencies every year to protect wild lands! Restoration projects are a lot of fun and no experience is required.

Just A few of our 2007 projects:

June 2—Castle Rock Restoration

June 20—Tamarisk Removal (St. Vrain State Park)

July 6—Phantom Canyon Restoration (Nature Conservancy)

July 18—Native Seed Collection (Blder Cty Open Space)

Aug 23-26—Crater Lakes Trail Restoration (Wilderness)

Sept 22—Left Hand Canyon Road Closure and Restoration

For a full listing of 2007 projects, and to sign up for a project, visit our website at www.wlrw.org, or call 303.543.1411.



Blanket flower

A Bio Blitz in Select Fens of

by Johnny Proctor

The Fields Studies Committee sponsors plant inventories or other studies by CONPS members or authorized non-members or groups. The Committee maintains records of species identified or collected by CONPS members or authorized non-members and makes those plant lists available to CONPS members as well as other interested persons as a means of furthering knowledge about and appreciation of our native Colorado flora.

For this study, I led recruited participants who set out to relocate and expand surveys in and around historic occurrences of the round leaved sundew, *Drosera rotundifolia*, in Routt National Forest.

In Colorado, round leaved sundew is only known to occur in fens on living sphagnum moss and peat generated by *Sphagnum* moss (Wolf and Cooper 2006). Fens that support *Sphagnum* moss are a limited habitat in the Southern Rocky Mountains. Round leaved sundew is exceptionally well-adapted to the waterlogged and nutrient poor environment of fens where it derives a significant proportion of its nutrients through carnivory. It cannot compete and survive in any other habitat in Colorado.

METHODOLOGY

The importance of fens to regional and local biodiversity is well known. Fens support many rare plant and animal species, and unique communities. With this in mind we recruited 25 seasoned botanists and wetland ecologists to collect the data needed at occupied sites to better characterize

round leaved sundew's fen habitat in Colorado and to search for and document other state and globally rare plant species which may also occur in its habitat.

The 25 participants were split into five teams. A total of five sites were visited as a result of this effort, three of which had documented round leaved sundew occurrences, the other two supported similar habitat. Each team was assigned a leader who ensured the following five deliverables were accomplished at each site: 1) confirm sundew occurrences and update



Round Leaved Sundew. Photograph by Andrew Kratz

Element Occurrence Records, 2) generate complete vascular plant species lists, 3) collect and voucher all Bryophytes (mosses and liverworts), noting micro-topography and send to experts Bill Weber Ph.D. and R.E. Andrus for identification, 4) deposit noteworthy vascular plant discovery voucher specimens at CSU and CU, 5) sample water for chemical analysis of pH, Ca, Mg and electronic conductivity at CSU. Also determine pH at each site with mobile peizometers.

The group spent one fun night together at a group camp site in the Parks Range (beautiful) and spent two amazing days, searching for sundews, delineating found populations, creating complete vascular plant species lists, collecting and vouchering bryophytes and other noteworthy vascular plant species and sampling the water chemistry. Fun was had by all!

PURPOSE AND NEED FOR STUDY

Several factors drove the need for this study. Region 2 of the U.S. Forest Service had recently released a revised Sensitive

Species list which included several plant species that were known to share "fen" habitat with round leaved sundew. Information was needed to manage for these plants and their habitats.

During the Sensitive Species List revision process 900+ plant species were evaluated, of which some had insufficient information available to determine status including those known to share "fen" habitat with round leaf sundew. Information

was needed on distribution, species biology, habitat requirements and threats for these species.

Edward Gage and David Cooper Ph.D. were contracted by Region 2 of the USDA Forest Service to complete Species Conservation Assessment for round leaf sundew and other fen obligate plant species. Confirmation of round leaved sundew occurrences contributed to that assessment (www.fs.fed.us/r2/projects/scp/assessments/droserarotundifolia.pdf).

STUDY RESULTS

All data generated and compiled were provided to the Colorado Natural Heritage Project (CNHP). Non-sensitive data will be made available on the Field Studies Website http://www.conps.org/field_studies.html.

Three of the four historic occurrences of round leaved sundew on the Routt NF were relocated, confirmed and documented. The fourth occurrence is in the Zirkel Wilderness Area and will be visited at a later time.

One new occurrence of round leaved sundew was found on the Routt NF and documented for that site! Several other rare species were found at new site.

Analysis of water chemistry from samples at the round leaved sundew sites determined three of the four sites were intermediate poor fens (pH 4.9 - 5.6, mg/L Ca 1.6 - 5.6, mg/L Mg 0.33-0.72, and EC umhos/cm 21 - 55). The fourth site was a rich fen (pH 4.7, mg/L Ca 11.4, mg/L Mg 1.2, and EC umhos/cm 123). Although this site supports a number of state rare plant species it is relatively species poor with only nine vascular plant species and one *Sphagnum* moss species. While four of the

nine species documented at this site are state rare, it is relatively species poor which is somewhat inconsistent with the water sample results which indicate it is a rich fen. We would like to repeat water chemistry analysis.

Three of the four sundew sites observed were *Sphagnum* rich floating mats of peat in closed basin settings which supported relatively low species richness with 9-15 vascular plant species. The fourth site which is situated on a lakeside hill toe slope and is comprised of several types of *Sphagnum* rich fen communities including forested fens (alder & spruce), shrub dominated fens (bog birch & willow), and four types of graminoid dominated (wire sedge floating mat, livid sedge & Buxbaum's sedge mat, mud sedge & cottongrass floating mat) had the greatest species richness including 55 vascular plant species and 14 species of moss.

Other rare species were documented at the five sites. Some occurrences were new and some were historic records. New occurrences were discovered and documented for *Carex livida*, *Eriophorum gracile*, *Sphagnum angustifolium*, *Utricularia minor*, *Carex leptalea*, *Menyanthes trifoliata*, *Rhododendron albiflorum* var. *warrenii*, *Trillium ovatum*, *Carex magellanica* var. *irrigua*, *Carex lasiocarpa*, *Carex limosa*, *Comarum pulustre*, *Juncus filiformis*, *Ligularia bigelovii* var. *hallii*, *Petasites frigidus* var. *sagittatus*, *Sparganium natans*, *Carex buxbaumia*, *Carex interior*, *Dicranum polysetum* (2nd record for the

state), *Gaultheria humifusa*, and *Thalictrum alpinum*. *Carex diandra* was historically documented from the area but was not relocated.

Detailed results of this and future field studies will be posted at:

http://www.conps.org/field_studies.html.

REFERENCES:

Wolf, E., E. Gage, and D.J. Cooper. (2006, June 29). *Drosera rotundifolia* L. (roundleaf sundew): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/droserarotundifolia.pdf>.

Johnny Proctor works for the USFS. He is also the CONPS volunteer Field Studies Committee Chair. You can contact Johnny at jproctor@fs.fed.us.

If you are interested in participating in this years Field Studies Project, see announcement for volunteers on page 11.



Group Plant Keying Session. Photograph by Johnny Proctor.



TALES FROM THE FIELD

Another Glorious Day

by Leo P. Bruederle

While clearly the best part of my job involves the daily interactions with my students, this is second only to the fieldwork - not surprising given the wanderlust encoded by my Teutonic genes. Fortuitously, my systematic research on those sedges comprising the genus *Carex* has afforded me the opportunity to travel throughout much of the northern reaches of our hemisphere in search of elusive arctic elements and cryptic species. With about 2000 species, *Carex* is one of the largest genera of plants worldwide. Remarkably, new species are being described annually.

Although fieldwork can be tedious - hours, days, and even a lifetime searching fruitlessly for an obscure species. However, this tedium is peppered with glorious moments of insight, breathtaking views across spectacular landscapes, and, yes, even a modicum of adventure.

My affair with the sedges began over 30 years ago, and it has led me on searches, and goose chases, from Alaska, through northern Canada from the Northwest Territories to Labrador and Newfoundland, to the arctic reaches of Iceland and Scandinavia. During those travels, I have had the opportunity to explore lands that I had previously only read and dreamed about. And, in the process, I have been deposited in a deserted Inuit village, shot at while hiking along James Bay, ogled by bear, stalked by foxes, and harassed by hares.

However, my greatest adventure occurred in western Michigan, in the town of Portage, where a colleague, several students, and I were conducting a floristic survey of riparian communities following Portage Creek. It was here that we first encountered Albert Johnson, although he was dead at the time... recently deceased.

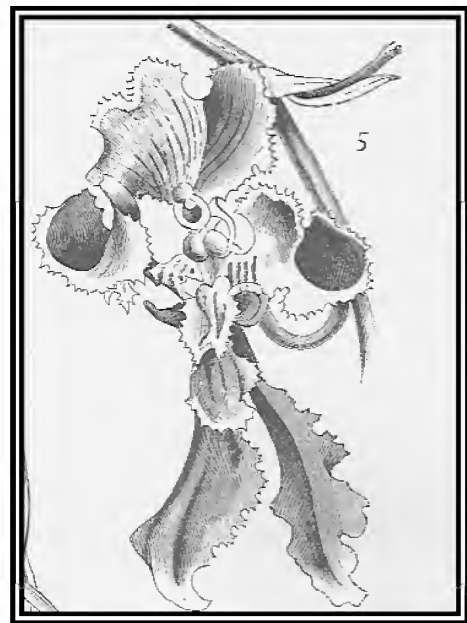
The morning preceding this most unexpected discovery had been uneventful. It was the last day of that field season and undergraduates Lois, Rebecca, and I were looking forward to one final foray scouring the landscape for late blooming asters, pondweeds, and grasses. The day had been uneventful, with few new species added to the list that we had been compiling throughout the year. Yet, Fall in Michigan is glorious and a day in the field is, well, a day in the field. Upon completing our survey that day, we headed inland, passing through an enclave of small cabins, when Lois exclaimed, "It's a body!" to which I responded, "yea, sure." "No, really," insisted Lois, "It's a body! And it's dead!"

Well, it was a body! A body belonging to the late Albert John-

son, as we would learn subsequently from the police record. A body with leathery brown skin and sunken eyes that had seen a great deal over a life spanning many, many years. A body clad in flannel shirt and worn dungarees. A body that had, just a day or two earlier, taken it's last breath while sitting on a bench overlooking Portage Creek on a glorious Fall day.

Leo Bruederle is the Chair of the Department of Biology at UCDHSC and the President of CONPS. He can be contacted at leo.bruederle@cudenver.edu.

Help sustain the lighter side of *Aquilegia* and send your funny, gruesome, unbelievable, embellished, terrifying-but-hilarious-in-hindsight, or otherwise entertaining tales from the field to John Giordanengo (john@wlr.org). Please submit ~500 words. Photos are welcome. We look forward to hearing your tales soon.



BOOK REVIEW

Flora of the San Juans

by Jan Loechell Turner

Flora of the San Juans: A Field Guide to the Mountain Plants of Southwestern Colorado. Susan Komarek. Durango, CO: Kivaki Press, 1994.

Talented author and illustrator Susan Komarek has produced a book that is useful for anyone interested in identifying plants in the San Juan Mountains and nearby foothills. The keys are accompanied by black and white line drawings that serve as a valuable supplement to the keys. There is a section of color photos in the middle of the book. In addition to the regular index, there is also a separate index to illustrations and photos.

It is extremely impressive that one person could create such a quality illustrated key. The book contains descriptions for over 700 vascular plants, over 300 line drawings, and 64 small, color photos. Komarek has a BS in wildlife biology from Colorado State University.

Jan Loechell Turner works at Regis University and is the CONPS Research Grants Committee Chair and is also our source for great book reviews.

These and other great books can be purchased through CONPS. Please visit our website for details.

CONPS Web Site News

The CoNPS web site, www.conps.org, continues to attract about 2,100 visitors each month and the site continues to expand. Recent additions include updates of programs and field trips on all chapter pages, many new links, several new botanical slide shows, and the daily "Botanical News" page. The latter contains information about conferences, jobs, new books, botanical garden events, EPA actions, research, legislation, etc. If you have botanical news you would like to post on the site or if you have good sources for botanical news, please send the information to webmaster@conps.org.

One recent addition to the web site that will be of great value in the coming months is the "Plant Lists" page. For many years trip leaders have been sending Loraine Yeatts plant lists compiled on field trips. Loraine has been formatting and cataloging these and making them available to everyone. These lists are now available on the CoNPS web site and can be easily printed. Take them on your field trips this year and be sure to send your new plant lists to Loraine. She will format them and be sure they get on the web site. If you do not have web access, you can obtain the lists from Loraine. Write her for details: 1395 Nile Street, Golden, Colorado 80401.

Volunteers Needed

Degener's Beardtongue Projects

Volunteers are needed during the 2007 field season to assist with research on the rare Colorado endemic, *Penstemon degeneri*. Degener's beardtongue is a local endemic found in the Wet Mountains south of Canon City. Hiking, camping and enthusiasm are the only requirements.

Two projects are underway. One is a pollination study to characterize the reproductive biology, including effective pollinators, of *P. degeneri*. Exact dates in late May and early June will depend upon the 2007 blooming season for several populations. Although several days are required throughout the growing season; you are welcome to participate for one or more days at a time. If you are interested in the pollination study contact Carol English @grownative@msn.com, or 303-697-3349.

The second project is to find new locations of *P. degeneri* and better describe the habitat. The information we collect will help the Forest Service and BLM protect and manage populations of Degener's beardtongue. These surveys will occur July 7 and 8. If you are interested in the field surveys, contact: Steve Olson at solson01@fs.fed.us.



Penstemon degeneri Degener's beardtongue
Photograph by Dave Elin.

Welcome New Members

Suzanne Aeberman	Frank Viehmann
Cheryl Ames	& Barbara Gyse
Byrd Bargman	Carrie Harrod
Dr. Ellen T. Bauder	Edna Hetchler
Dominique Bayne	Patrick Hickey
Katie Becklin	Heather Hopper
Richard Birnie	Cynthia Jaffe
William & Clara Boros	Shauna Jensen
Dr. Deane Bowers	Diana Jolles
John Bregar	Andrew P. Kannen
Raymond Bridge	Karen Lamrein
Mary Bruner	Eric Laprice
Pauline Butcher	Warren Levingston
Erica Christensen	Bethany Lewis
Coralie Cobb	Lowell Baumunk
Jan Collins	& Barbara Lewis
Cathy Cook	Lee Lindholm
Brian D. Core	Deane Little
Robert & Beverly	Marilyn Mccord
Danielson	Nancy McGill
Billie Dawson	Sara McGimsey
Catherine Dickert	Ray Miller
Katharine M. Driver	Sharon Moore
Peggy Dunavan	Jessie Morgan
Larry D. Eads	Cecily Mui
Trudi Eldridge	Sheila Murphy
Carol English	Debra Nicholson
Judy Fairchild	Patti O'Neal
Ann Felty	John & Erin Paden
Gretchen Fitzgerald	Kristen Philbrook
Trish Flaster	Nancy Phillips
Devra Fogel	Marcia Rickey
Judith M. Franklin	Jenna Rueschhoff
Margaret Furum	Barbara E. Russell
Candace Galen	Irene Shepard
John Godben	Nancy Shipps
Lynn Gray	Cathern Smith
Kathleen Green	Ellen Smith
Nancy & Vernon Greif	Larry & Bonnie Sprague
Richard & Gail Grossman	Stephanie Szostek
Christine Guzy	Janice & Brooks Taylor
	Jennifer Taylor

Emily Thurston-Moench
Ann Trulove
Cheryl Wagner
Chris Wanner
Jan Weatherby
John C. Webb
Becky Wegner
Kent Wilson
Andi Wolfe
& Tommi Wolfe



Obituary: Louise Roloff

by *Hugh Kingery*

Botanist and mountain climber, observer of nature, Louise Roloff brought cheer and knowledge to native plant enthusiasts and hiking companions.

Louise immersed herself in things botanical. While living in Dillon she surveyed flowering plants of the Blue River Valley, the Gores, and the Continental Divide around Loveland Pass. The Denver Botanic Gardens honored her by inviting her to give one of their annual lectures, a privilege accorded to those who have contributed to botanical knowledge of the Rocky Mountains. We frequently sent her plant specimens for identification; she kept trying to train us in the technique of properly pressing them so that she could examine all parts of the plants and provide an accurate identification.

Her curiosity about nature extended to birds as well. During the Colorado Breeding Bird Atlas, Louise hoofed it up the west ridge from Loveland Pass to confirm that ptarmigan bred in that Atlas block. She recounted a climb of Mount Bross where, at 13,500 feet, she had ducked into an abandoned miner's cabin packed full of snow -- where she discovered a pair of Mountain Bluebirds feeding young.

In the 40's and 50's, she went on many climbs with The Colorado Mountain Club. On the CMC's Gore outing in 1948 she climbed Mount Powell and Peaks C, D, E, and F. Their climbing party pioneered routes on the lettered peaks, including the second ascent of Peak C.

In later years, Louise lived in far north Denver. She often prowled nearby wild places to seek spring flowers, summer bloomers, and fall color. Louise passed on in January, 2007, after a long and active life in the outdoors.

An article she wrote for the Colorado Mountain Club magazine about the Gore Outing expresses well the delight she derived from Colorado: "I thoroughly enjoyed the ropeless climbing, the peaks with only a small cairn on top and no record of previous climbs, no tin cans and orange peels on the summits, gorgeous flowers, ptarmigan, a mountain sheep, many deer, and even two porcupine above timberline in the rocks with the conies and marmots."

Southwest Chapter News

On February 10th the Southwest Chapter held "An Introduction to Wildflower Identification" workshop. Dick Moseley provided an excellent slide show and lecture about plant parts and key characteristics of the major plant families. Al Schneider discussed botanical books, nomenclature, and the use of plant keys. Thirty-one participants found their tables covered with fresh flowers, dried specimens, a seed collection, microscopes, and books for sale. CoNPS now has twenty-eight new members.

And the Southwest Chapter will give these new members plenty to do this summer on fifteen field trips ranging from low desert hanging gardens, to canyons, to high mountain fens, to alpine tundra. Call the trip leader and see the CoNPS web site for more details. The trips are free and open to everyone.

May 12: Utah Canyon Country. Trip leader: Arnold Clifford. Call Charlie King (970) 731-4794.

June 5: Vallecito Lake. Trip leader: Marilyn McCord (970) 884-2220. Co-leader, Al Schneider.

June 15: Field Trip and Workshop on the Flora of Fire-Scarred Mesa Verde. Special guest trip leader: Joyce Gellhorn. Co-leader: Susan Halabrin (970) 264-5447.

Late June: Propagation of Native Wildflowers. At Cliff Rose Nursery just east of Cortez. Call Al Schneider (970) 882-4647.

June 23: Rare Plants of the Vallecito Area. Leaders: Ken Heil and Steve O'Kane. Call Ken (505) 327-4608.

June 30: Wildflower Photography. Trip leader: Al Schneider (970) 882-4647.

July 14-15: Owl Creek Pass, Ridgway. Peggy Lyon of the Colorado Natural Heritage Program will lead a two day trip in this scenic area. Call Al Schneider for information (970-882-4647).

July 24: Montane Wildflowers along the Pass Creek Trail, Coal Bank Pass. Trip leader: Travis Ward, (970) 247-1310.

August 18: East Fork of the San Juan. Trip leader: To be announced.

August 25: Grindstone Lake Fens. Trip leader: Marion Rohman, (970) 565-9327.

Early September: Seeds of summer plants. Trip leader: Dick Moseley (970) 731-5918.

October 6 : Forest Tree Life Zones Tour "On the Path to Aspen Fall Color". Trip leader: Phil Kemp (970) 882-2251.

The Southwest Chapter has established an email exchange with the Flagstaff Chapter of the Arizona Native Plant Society and with the Farmington Chapter of the Native Plant Society of New Mexico. Now members of all three chapters are informed of each other's activities. If you are not a Southwest Chapter member but would like to be on the Southwest Chapter email list, send an email to the head of the Southwest Chapter, Al Schneider, webmaster@conps.org.

The Farmington Chapter will be hosting the Annual Meeting of the Native Plant Society of New Mexico August 2-5 (see their web site for details) and several members of the Colorado Native Plant Society will be making presentations and leading field trips.

Aquilegia Gets a Face Lift!

You may have noticed some changes in *Aquilegia*. We are trying to improve it's readability by increasing spacing and increase the diverse articles. We have already moved to a quarterly distribution. As a result, the issues are larger. This year is a year of experimentation and change. We hope to have a solid product by the end of 2007 so that starting in 2008 we will have a consistent newsletter. For the next issue, I hope to improve the quality of the photographs.

If you have comments regarding any of the changes or have other suggestions, please contact Kim Regier at kimberly.regier@cudenver.edu.

Flora of North America Reaches Halfway Mark

More than 900 botanists, working as part of the Flora of North America project, have now cataloged over half of the genera of higher plants native or naturalized in North America north of Mexico and hope to finish by 2011. This is the first comprehensive and scientifically authoritative publication treating the 20,000+ species of plants in U.S. and Canada together.

Thirteen volumes have been published (including an introductory volume), one is being printed, and publication of two more is expected this year, out of a total of 30. The second volume of grasses (Poaceae, Volume 24) came out in early 2007, completing the monocotyledonous plants. The first of three volumes on mosses, liverworts, and hornworts is in press. Especially exciting was the publication of all three volumes on the sunflower family (Asteraceae, Vols. 19, 20, 21) last year. The treatments include identification keys, nomenclatural information, common names, descriptions, distributions (including maps), and discussions. Every genus and 1/3 to 1/6 of the species is illustrated.

FNA makes many lifetimes of study, and the best knowledge

from regional floras, available in print and electronically. Editorial centers are located at Missouri Botanical Garden, the Hunt Institute for Botanical Documentation, Université de Montréal, and University of Kansas. Authors base their work on knowledge of plants in the field, herbarium specimens, and review of the literature. The project also has a network of regional reviewers. Authors and editors work as volunteers; grants and donations support technical editors and botanical illustrators. The books are published by Oxford University Press--US and currently are on sale at the discounted price of \$76/volume (available at www.oup.com/us/fnaserie with promo code 25316). More information on Flora of North America and treatments from published volumes are available at www.fna.org.

For more information contact Nancy R. Morin, FNA Business Office, P. O. Box 716, Point Arena, California, 707/882-2528, nancy.morin@nau.edu.



2007 CONPS Grants Awarded

Congratulations to the 2007 CoNPS grant recipients. The following research has been selected for funding by the CoNPS Research Grants Committee:

John W. Marr Fund

Katie Becklin. Univ. of Missouri, Columbia. Do Mycorrhizal Associations Affect the Invasibility of Alpine Willow Communities?

Diana Jolles, Ohio State University, Columbus. The Biogeography and Phylogenetics of the *Pyrola picta* species complex.

Myrna P. Steinkamp Fund

Carol English. University of Colorado at Denver and Health Science Center. Pollination biology and Population Genetics Study of the Rare Colorado Endemic, *Penstemon degeneri*.

Denise Wilson. University of Colorado at Denver and Health Science Center. *Epipactis gigantea* - a pollination study.

Thanks to the generous contributions of many members and supporters, nearly \$3,000 each year is available for grants. Your donations to these funds is encouraged and welcomed. Please make you check to the Colorado Native Plant Society, designate the fund(s) to which you are donating and mail to:

Treasurer
CONPS
P.O. Box 200
Fort Collins, CO 80522.



Aquilegia

The Colorado Native Plant Society is a non-profit organization dedicated to the appreciation and conservation of the Colorado native flora. Membership is open to all with an interest in our native plants, and is composed of plant enthusiasts both professional and non-professional.

Please join us in helping to encourage interest in enjoying and protecting Colorado's native plants. The Society sponsors field trips, workshops, and other activities through local chapters and statewide. Contact the Society, a chapter representative, or committee chair for more information.

Schedule of Membership Fees

Life	\$250
Supporting	\$50
Organization or Corporate	\$30
Family or Dual	\$20
Individual	\$15
Student or Senior	\$.8

Membership Renewal/Information

Please direct all membership applications, renewals and address changes to Eric Lane, Chair of Membership, Colorado Native Plant Society, P.O. Box 200, Fort Collins, CO 80522. Please direct all other inquiries regarding the Society to the Secretary at the same address.

Aquilegia is published four or more times per year by the Colorado Native Plant Society. This newsletter is available to members of the Society and to others with an interest in native plants. Articles for *Aquilegia* may be used by other native plant societies or non-profit groups, if fully cited to author and attributed to *Aquilegia*.

Articles from 500 to 1500 words in length, such as unusual information about a plant, are welcome. Previously published articles submitted for reprinting require permission. Digital photographs or line drawings are also solicited. Please include author's name and address, although anonymity may be requested. Articles must be submitted electronically.

Please direct all contributions to the newsletter to:

Kim Regier

E-Mail: kimberly.regier@cudenver.edu

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Name(s) _____

Address _____

(Address) _____

City _____ State _____ Zip _____

Phone _____ E-mail _____

MEMBERSHIP CLASS:

Dues cover a 12-month period.

- ___ Individual, \$15.00
- ___ Family/dual, \$20.00
- ___ Senior, \$8.00
- ___ Student, \$8.00
- ___ Corporate, \$30.00
- ___ Supporting, \$50.00
- ___ Lifetime, \$250.00

Chapter (Circle one): Boulder Northern CO Metro Denver Plateau Southeast Southwest

In addition to my membership, I have included \$_____ as a contribution to the John Marr Fund (endowment in support of small grants-in-aid of research), \$_____ as a contribution to the Myrna P. Steinkamp Memorial Fund (endowment in support of small grants-in-aid of research), or \$_____ as a general contribution to the Society.

CONPS IS A NON-PROFIT ORGANIZATION — DUES AND CONTRIBUTIONS ARE TAX-DEDUCTIBLE



CALENDAR 2006 - 2007

FIELDTRIPS

May 12	Duck Creek
May 19	Glade Reservoir Plant Survey
June 11	Denver Botanic Gardens
June 19	NE CO Sandhills and Sandstone Bluffs Flora
June 24	Native Orchid Hike to Peaceful Valley
July 1	Hanging Lake Trail
July 3-4	Cal Wood Butterfly Count
July 7	Two Buttes & Shell Rock Natural Area
July 8	Gilpin County Butterfly Count
July 15	Fens of South Park
August 6	Lake Pueblo State Park
August 18	Glad Reservoir Plant Survey
January 12	Winter Botany

ANNUAL MEETING

September 7-9	University of Colorado at Boulder
	Botany Goes Buggy in Boulder: Plants and Insects

See pages 1-4 for details or <http://www.conps.org/conps.html>.

TIME SENSITIVE MATERIAL

